CLAIMS

1. A multi-vane centrifugal fan, comprising:

an impeller (3), comprising:

a hub (31) rotatably driven around a shaft core;

numerous vanes (33), (33), ... provided and arranged with a prescribed spacing in the circumferential direction of said hub (31), and fixed to said hub (31); and

an annular member (32) for reinforcement provided on the side of said numerous vanes (33), (33), ... opposite said hub (31); and

a fan housing (4) wherein an air suction port (5) is formed, and that rotatably houses said impeller (3) therein;

wherein,

a bell mouth (7) having a recessed part (7a) of a prescribed depth is provided in said fan housing (4) around the circumference of said air suction port (5); and

air suction port side end parts (33d), (33d), ... positioned on the side of said numerous vanes (33), (33), ... opposite said hub (31) are rotatably inserted inside the recessed part (7a) of said bell mouth (7), without having a shroud.

2. The multi-vane centrifugal fan as recited in Claim 1, wherein

the vane width that is the length of said numerous vanes (33), (33), ... in the shaft core direction is constituted so that an air outlet side (33b), and so that it decreases with a prescribed variation pattern from the air inlet side (33a) to the air outlet side (33b).

3. The multi-vane centrifugal fan as recited in Claim 2, wherein

the prescribed variation pattern wherein said vane width decreases is a pattern that changes the shape of said air suction port side end part (33d) to a curved shape from the air inlet side (33a) to the air outlet side (33b).

4. The multi-vane centrifugal fan as recited in Claim 2, wherein

the prescribed variation pattern wherein said vane width decreases is a pattern that changes the shape of said air suction port side end part (33d) to an arcuate shape having a prescribed curvature from the air inlet side (33a) to the air outlet side (33b).

5. The multi-vane centrifugal fan as recited in Claim 2, wherein

the prescribed variation pattern wherein said vane width decreases is a linear variation pattern wherein the shape of said air suction port side end part (33d) linearly changes from the air inlet side (33a) to the air outlet side (33b).

6. A multi-vane centrifugal fan as recited in Claim 2, Claim 3, Claim 4, or Claim 5, wherein said annular member (32) is provided positioned at the portion that is on said air outlet (33b) side of said numerous vanes (33), (33), ... , where the vane width that is the length of said numerous vanes (33), (33), ... in the shaft core direction becomes smallest, and that is on said air suction port (5) side.

7. A multi-vane centrifugal fan, comprising:

an impeller (3), comprising:

a hub (31) rotatably driven around a shaft core;

numerous vanes (33), (33), ... provided and arranged with a prescribed spacing in the circumferential direction of said hub (31), and fixed to said hub (31); and

an annular member (32) for reinforcement disposed on the outer side in the radial direction of said numerous vanes (33), (33), ... , and integrated with the end parts on the side of said numerous vanes (33), (33), ... opposite said hub (31); and

a fan housing (4) wherein an air suction port (5) is formed, and that rotatably houses said impeller (3) therein;

wherein,

the spaces interposed between adjacent vanes (33), (33) of said impeller (3) are fully open in the shaft core direction and in the direction of the side opposite said hub (31);

a bell mouth (7) having a recessed part (7a) of a prescribed depth is provided in said fan housing (4) around the circumference of said air suction port (5); and

air suction port side end parts (33d), (33d), ... positioned on the side of said numerous vanes (33), (33), ... opposite said hub (31) are inserted inside the recessed part (7a) of said bell mouth (7).